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LETTER TO THE EDITOR

Alternate method to secure the aorta for organ perfusion in donation after cardiac death donors

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We read with interest, a method described by Nguyen [1], for rapidly controlling the aorta during organ procurement in donation-after-cardiac-death (DCD) donors.

In a similar attempt to minimize the warm ischemia time during a controllable portion of the procurement, we employ a technique for securing a cannulated distal aorta with the use of a releasable cable tie (Fig. 1a). After entrance into the abdomen, the small bowel is displaced cephalad, the distal para-aortic retroperitoneum is incised with the tip of a right-angle clamp, and the aorta is encircled with the tip of the clamp. The clamp is rotated 90° caudad to allow for anterior–posterior displacement of the tip, which is then used to pull the tip of the cable tie through behind the aorta. The cable tie tip is fed into the head to loosely encircle the aorta and is raised to lift the aorta off the retroperitoneum, thus allowing for an aortotomy to insert and position the cannula. Once the cannula is intraluminal, it is positioned for the tip to lie within the cable tie loop. The cable tie is then tightened securely over the aorta and cannula (Fig. 1b).

The cable tie used is approximately 20 cm. in length, made from heavy-duty nylon, has a maximum bundle diameter of 44.5 mm, and a tensile strength over 20 kg. Each tie is adjustable, and can accommodate any aortic (and/or cannula) circumference, while the broader area of contact from the band negates the necessity for a cuffed cannula in DCD donors. The ratchet-locking teeth can be released if repositioning is needed, and the band allows for an evenly distributed grip around the aorta, which becomes more useful and effective in donors with moderate to severely atherosclerotic aortas (umbilical tapes can fracture or tear friable aortic walls and clamps can leave gaps between plaques), in obese donors with moderate peri-aortic fat, and in instances where the cannula is significantly smaller than the aorta in diameter. Compared with the use of surgical clamps, e.g. Babcock or Cooley caval occlusion clamps, cable ties are less obtrusive after placement because of its small size and compliance, in particular when small bowel and its mesentery are replaced in the lower abdomen.

We initially applied this technique during procurements on stable donation-after-brain-death donors when no assistants were available, as it can be performed single-handedly. Its success has led us to apply it in case of DCD procurements, and we believe it to have advantage over other methods for securing the aortic cannula (e.g. umbilical tapes, Rumel tourniquets) under atypical conditions. No cannula displacements have been noted after 27 consecutive applications, and our mean incision-to-perfusion time in DCD donors is 4.4 ± 1.1 min.

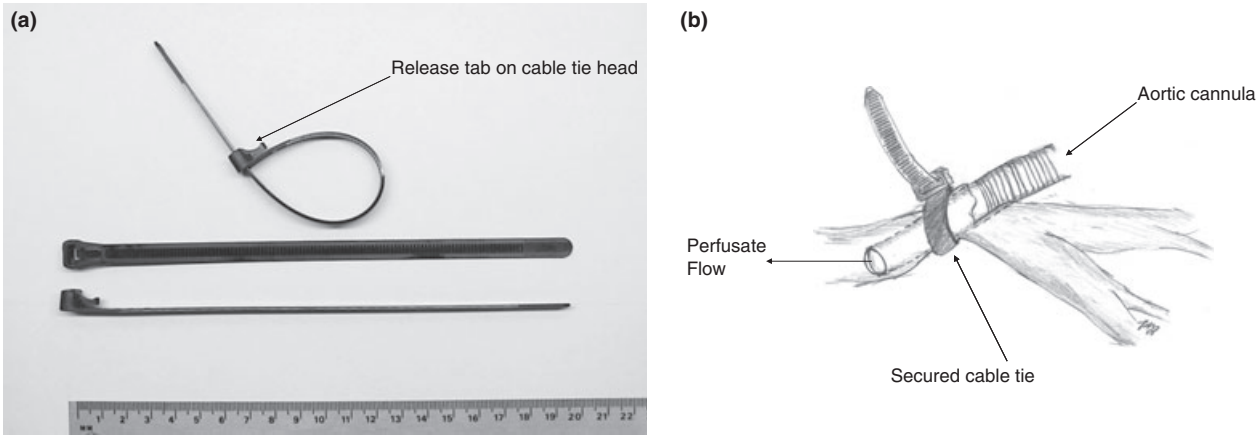

Figure 1 (a) Cable tie (side, posterior, and closed loop views) with release (pawl or trigger) tab on its head to allow for re-positioning. (b) Cannulated distal aorta secured with fastened cable tie.

Cable ties are readily available (hardware store), are significantly less costly than the components used in other methods, and are easily (re-)sterilized. Its use during DCD procurements, in addition to implementing efficient DCD organ donation protocols (e.g. ICU to OR transport time and methods), may contribute to decreasing pre-perfusion WIT. The ties are effective, and can be rapidly applied despite variable aortic diameters and vessel wall irregularities. Their use provides an alternate method for securing an irregular aorta during DCD procurements.

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Reference

1. Nguyen JH. A technique for rapid control of distal aorta in donation after cardiac death procurements. *Transpl Int* 2008; **21**: 186.

